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| 10/615,147 | 07/08/2003 | David W. Abraham | YOR920010260US2 | 8233 |

7590 07/09/2007
Dr. Daniel P. Morris, Esq.
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| EXAMINER |
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LE. THONG QUOC

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| ART UNIT | PAPER NUMBER |
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2827

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07/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/615,147

Applicant(s)

ABRAHAM ET AL.

Examiner

Thong Q. Le

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-24, 26-33, 35-49 and 51-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-24, 26-33, 35-49, 51-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Amendment filed on 05/14/2007 has been entered.
2. Claims 21-24, 26-33,35-49,51-60 are presented for examination.

Response to Arguments

3. Applicant's arguments with respect to claims 21-24, 26-33, 35-49,51-60 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 42-43, 47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 42, the limitation "the heat and at least one magnetic field are applied to the memory element simultaneously" is not provided in written description.

Regarding claim 43, the limitation "heat is applied and removed before at least one magnetic field is applied to the memory element" is not provided in written description.

Regarding claims 47, 59, the limitation "first and second orthogonal fields are applied to the memory element" is not provided in written description.

Double Patenting

6. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

7. When two claims in the applications are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording.

8. Claims 21-24, 26-33, 35-40 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-19 of prior U.S. Patent No. 6,724,674. This is a double patenting rejection.

Regarding claim 21, Abraham et al. (U.S. 6,724,674) disclose a method for writing to a memory storage device comprising: providing a storage cell comprising a changeable magnetic region, said changeable magnetic region comprising a material having a magnetization state that is responsive to a change in temperature thereof; and heating an element of said storage cell for selectively changing the temperature of said

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changeable magnetic region of said storage cell; said heating said element is provided by passing an electric current therethrough (invention of Claims 1+5)

Regarding claims 22-24, Abraham et al. (U.S. 6,724,674) disclose wherein said storage cell comprises a magnetic tunnel junction (Claim 2), and wherein said changeable magnetic region is a reversible magnetic region having a magnetization state which can be reversed by applying thereto a selected magnetic field, said reversible magnetic region comprising a material having a magnetization state that is responsive to a change in the temperature thereof (Claim 3), and wherein said storage cell further comprises at least one fixed magnetic region having a magnetization state which does not reverse when said selected magnetic field is applied thereto (Claim 4).

Regarding claims 26-29, Abraham et al. (U.S. 6,724,674) disclose further comprising providing an electrically conductive terminal capable of receiving the electric current passing through said heating element (Claim 6), and wherein said material having a magnetization state that is responsive to a change in temperature thereof comprises a ferrimagnetic material (Claim 7), and further comprising maintaining said changeable magnetic region at a compensation temperature of said material to maintain stored data in said storage cell (Claim 8).

Regarding claims 29, Abraham et al. (U.S. 6,724,674) disclose a method for writing to a memory storage device a) providing a storage cell comprising a changeable magnetic region, said changeable magnetic region comprising a material having a magnetization state that is responsive to a change in temperature thereof; and b) heating an element responsive to an external energy source and proximate to said

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storage cell for selectively changing the temperature of said changeable magnetic region of said storage cell, c) said heating said element is provided by passing an electric current through said element (Claims 9+14).

Regarding claim 30, Abraham et al. (U.S. 6,724,674) disclose a method for writing to a memory storage device comprising a memory array comprising two or more memory storage devices, said method comprising:

a) providing a storage cell having a bit line and word line associated therewith, said storage cell comprising a changeable magnetic region, said changeable magnetic region comprising a material having a magnetization state that is responsive to a change in temperature thereof; and

b) heating an element proximate to said storage cell for selectively changing the temperature of said changeable magnetic region of said storage cell;

c) said heating said element is provided by passing an electric current through said element (Claims 10+14).

Regarding claims 31-33, 35-38, Abraham et al. (U.S. 6,724,674) disclose wherein said storage cell comprises a magnetic tunnel junction (Claim 11), and wherein said changeable magnetic region is a reversible magnetic region having a magnetization state which can be reversed by applying thereto a selected magnetic field, said reversible magnetic region comprising a material having a magnetization state that is responsive to a change in temperature thereof (Claim 12), and further comprising providing at least one fixed magnetic region having a magnetization state which does not reverse when said selected magnetic field is applied thereto (Claim 13),

and wherein said at least one of said memory storage devices further comprises an electrically conductive terminal capable of receiving the electric current passing through said heating element (Claim 15), and wherein said passing said electric current through said heating element is for a predetermined time period, wherein said time period is sufficiently short so as to prevent reversal of a magnetization state of one or more storage cells adjacent to the selected storage cell (16), and wherein said material having a magnetization state that is responsive to a change in temperature thereof comprises a ferrimagnetic material (Claim 17), and wherein said changeable magnetic region is maintained at a compensation temperature of said material to maintain stored data in said storage cell (Claim 18).

Regarding claim 39, Abraham et al. (U.S. 6,724,674) disclose a method for writing to a memory storage device on an integrated circuit comprising at least one memory storage device, said method comprising:

- a) providing a storage cell comprising a changeable magnetic region, said changeable magnetic region comprising a material having a magnetization state that is responsive to a change in temperature thereof; and
- b) heating an element proximate to said storage cell for selectively changing the temperature of said changeable magnetic region of said storage cell (Claim 19).

Regarding claim 40, Abraham et al. (U.S. 6,724,674) disclose wherein said at least one memory storage device further comprises an electrically conductive terminal capable of receiving an electric current passing through said heating element (Claim 20).

Regarding claim 39, Abraham et al. (U.S. 6,724,674) disclose a method for writing to a memory storage device on an integrated circuit comprising at least one memory storage device, said method comprising:

a) providing a storage cell comprising a changeable magnetic region, said changeable magnetic region comprising a material having a magnetization state that is responsive to a change in temperature thereof; and

b) heating an element proximate to said storage cell for selectively changing the temperature of said changeable magnetic region of said storage cell (Claim 10).

Regarding claim 40, Abraham et al. (U.S. 6,724,674) disclose wherein said at least one memory storage device further comprises an electrically conductive terminal capable of receiving an electric current passing through said heating element (Claim 15).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 41-49, 51-58, 60 are rejected under 35 U.S.C. 102(b) as being anticipated by Slonczewski (U.S. Patent No. 5,695,864).

Regarding claim 41, Slonczewski discloses a method of writing to a magnetic memory element of an array of magnetic memory elements (Column 2, lines 1-3, Figure 4), the method comprising:

heating the memory element (Column 5, lines 45-47) wherein the memory element is heated by passing a current through a conductor (Figure 4) ; and applying at least one magnetic field to the memory element (Column 2, lines 29-35).

Regarding claims 44-46, 53-54, 58, Slonczewski disclose wherein the heating raises the temperature of the memory element by about 5°C to 10°C above a compensation temperature (Column 7, lines 59-64), and wherein the heating raises the temperature of the memory element (Column 7, lines 59-67), and wherein a junction is heated by passing said current through a conductor (Column 8, lines 20-25).

Regarding claims 48-55-57, 60, Slonczewski disclose an information storage device (Figure 6) comprising: an array of magnetic memory elements (Figure 6, M1, M2); and a plurality of heating elements for the said array of magnetic memory elements (ABSTRACT), said heating elements are included in the devices with said magnetic memory elements extending across the array (Figures 5-6), and wherein the heating elements are conductors (Column 5, lines 45-47), and wherein the heating lines extend diagonally across the array (Figure 6), and further comprising first means for generating magnetic fields for switching selected memory elements; and second means for causing the heating elements to apply heat to the selected memory elements while the magnetic fields are being applied (Column 1, lines 16-20, Column 10, lines 2-9).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Le whose telephone number is 571-272-1783. The examiner can normally be reached on 8:00am-5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarabian Amir can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thong Q. Le
Primary Examiner
Art Unit 2827

A handwritten signature in black ink, appearing to read 'Thong Q. Le', is written over the printed name and title.